EXHIBIT 20

BaiTip of the Day - November 8th, 2016 - MME and PLMN Settings

History

rick.harnish **Sep 27, '19**

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Operators using the Baicells Cloud Core EPC have two settings in each eNodeB that are mandatory for authentication, the MME = 10.3.0.4 and the PLMN = 31198. Do not change these settings unless you are connecting to a different hardware EPC (core). Below are definitions of MME and PLMN as well as a shapshot of the settings screen in the BiaOMC platform for eNB settings.
MME Mobility Management Entity LTE Mobility Management Entity is responsible for initiating paging and authentication of the mobile devices.
PLMN Public Land Mobile Network A public land mobile network is any wireless communications system intended for use by terrestrial subscribers in vehicles or on foot. Such a system can stand alone, but often it is interconnected with a fixed system such as the public switched telephone network.

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eNodeB

Q: Is the eNB powered by PoE?

A: Some models of eNBs are powered by PoE, while others are powered by +/- 48V DC. For your specific model, check the data sheet specifications on our website: https://baicells.zendesk.com/hc/en-us/categories/204105328-Hardware

Q: Does the eNB support fiber?

A: Our first generation of eNBs only supported copper backhauls, but starting with our second generation of products fiber and copper are supported on some models. For your specific model, check the data sheet specifications on our website: https://baicells.zendesk.com/hc/en-us/categories/204105328-Hardware

Q: Do you have a management port?

A: Yes, one dedicated Ethernet port.

Q: How many users are supported?

A: The user capacity depends on the eNB model. Our first generation of products supported 32 active and 96 connected users but has increased to 96 users with recent software upgrades. Our second generation of products support anywhere from 32 to 255 active users depending on the eNB model and LTE mode of operation (FDD or TDD). For your specific model, check the data sheet specifications on our website: https://baicells.zendesk.com/hc/en-us/categories/204105328-Hardware

Q: What is the typical latency?

A: 10ms w/2 subscribers. Typical is 20 ms. Jitter is 1 to 2 ms.

Q: What are the maximum download and upload speeds?

A: The maximum DL and UL speeds depend on the eNB model, mode of operation, and if TDD mode, the SubFrame Assignment configuration. Generally, the eNB provides 110 Mbps DL and 20 Mbps UL. For your specific model, check the data sheet specifications on our website: https://baicells.zendesk.com/hc/en-us/categories/204105328-Hardware

Q: What is the maximum distance?

A: The maximum distance or range achievable by a single eNB depends on many factors. In general FDD mode can provide greater coverage than TDD, but TDD uses less spectrum as resources are shared based on timing between DL and UL transmissions on the same frequency. The answer to this question also depends on the eNB model used, e.g., 1Watt vs 10Watt power. Other variables such as LOS vs NLOS, interference, and UE antenna gain also affect the distance for a good enough signal between the eNB and UE. In general, as a guideline you can expect roughly a maximum limit of 8-10 miles (14-16 km).

Q: Is GPS included?

A: Yes, the GPS is included with outdoor eNBs. Some are embedded and some are external. Please refer to the data sheet specifications for your model: https://baicells.zendesk.com/hc/en-us/categories/204105328-Hardware

Q: How many eNBs can sync together?

A: eNB syncing is unlimited.

Q: Does the Nova eNB sync with other LTE manufacturers' equipment?

A: Baicells follows the LTE 3GPP standards and does sync with many other brands.

Q: Does the eNB have a built-in spectrum analyzer?

A: Not at this time, but a future software update is planned to incorporate this functionality.

Q: What antennas do you support?

A: We recommend slant 45 antennas for LTE operation. The following vendors have been approved for operation with Baicells: KP Performance, Alpha Wireless, Radio Frequency Systems (RFS), MTI, Mars,

Radio waves, and must necessarily be line-of-sight. Work with your deployment partner for the proper antenna for your network requirements.

Q: What is the operating temperature range? Can it support operations in -40C weather?

A: Most of the Baicells eNBs operate in the range of -40F to 131F (-40C to 55C). For your specific model, check the data sheet specs on our website: https://baicells.zendesk.com/hc/en-us/categories/204105328-Hardware

Q: How long is the Baicells manufacturer warranty for?

A: Baicells warrants your product to be free from physical defects in material and workmanshiip for a period of 1 year from the date of the original retail purchase. You can find the written standard product warranty on our website: https://baicells.zendesk.com/hc/en-us/articles/360000992414-Baicells-Standard-Product-Warranty

Q: Will there be an option for Layer 2 connections?

A: Currently in testing. Layer 2 is projected to be supported soon.

Q: Where am I setting bandwidth restrictions, and how is bandwidth controlled?

A: You can configure the eNB bandwidth settings using either the eNB GUI or the OMC. Refer to the Baicells Configuration & Network Administration Guide: https://baicells.zendesk.com/hc/en-us/articles/115002163893-Configuration-Network-Administration-Guide

Q: When my trial kit arrives what kind of information should I expect to arrive with it?

A: An installation guide or user manual will be provided and may be found on our website: https://baicells.zendesk.com/hc/en-us/categories/204105328-Hardware

Q: Do you have a proposed channel plan, e.g., antenna down tilt, polarization, specification?

A: ABAB (reuse 2). Down tilt depends on desired coverage. Dual slant polarization.

Q: Is the attention to the UE slotted or scheduled?

A: Scheduled. LTE has about half the latency of WiMAX. Operators who only have experience with Wi-Fi based or Cambium products often ask about latency. There is no issue with latency with LTE, not even with gamers or other sensitive applications. LTE has about half the latency of WiMAX. The issue is really about jitter and that's problematic with best effort technologies like Wi-Fi because latency is so variable.

Q: I have an eNB in the field that has a bad surge arrestor. Can you test the DL bandwidth on the eNBs by bypassing the Ethernet surge arrestor?

A: If your surge arrestor is not up to par, we suggest skiipping the Ethernet surge arrestor and connecting directly to the PCB Ethernet port. If you are having an issue with a surge arrestor, please email support_na@baicells.com to request an exchange. If you do not want to exchange it, we suggest you bypass the Ethernet surge arrestor.

Q: What is the proper way to set the mobile carrier code (PLMN) on the eNB?

A: All operators using the Baicells CloudCore OMC share the same public land mobile network (PLMN) number: 31198

Q: Why does the GUI take me back to the login page when I try to click on any of the items in the left column?

A: This problem may be due to having more than one tab open to the eNB web GUI. You can resolve this by either closing the second tab, closing and reopening the web browser, or accessing the web GUI from a different web browser.

Q: If the eNB frequency is set at 3660/20MHz, does this mean the frequency will cover 3650 to 3670?

A: Yes, if the frequency is set to 3660 the eNB will use 3650-3670.

Q: How can I avoid a PCI violation?

A: Physical Cell Identifier, or Layer 1 identity, is an essential configuration parameter of a radio cell that uniquely identifies each cell site in the wireless network. PCI planning is crucial for quality of service (QoS). Use a PCI calculator or the PCI planning spreadsheet provided on our website to plan your PCIs. No two eNBs in close proximity to another should have the same PCI number. The more cells you deploy, the more this will matter and can cause problems. Refer to the BaiTip on this subject: https://community.na.baicells.com/t/baitip-of-the-day-december-15th-2016-physical-cell-identifiers-pci/169

Q: Is there any way to increase the distance of the coverage area through configuration settings?

A: Two configurable parameters can affect the distance that an eNB can reach UEs: One is the Special SubFrame Pattern (SSP), and the other is the Zero Correlation Zone index. Setting the SSP to 5 (instead of the default 7) increases the guard time between transmissions switching from downlink to uplink or from uplink to downlink. This provides more time for the signal to radiate in one direction before switching to the other direction. Please note that all sectors on the same tower should use the same SSP setting of either 5 or 7. Setting the Zero Correlation Zone index anywhere from 13 to 15 also can provide support for greater

distance. You may need to adjust the CINR value for your coverage area setting. Many factors affect distance and signal quality, including foliage or other objects between the antennae, weather, interference, power level, etc. Please refer to the Baicells Configuration & Network Administration Guide or the Baicells Operation, Maintenance, & Troubleshooting Guide for more details: https://baicells.zendesk.com/hc/en-us/categories/204105328-Hardware

Q: What does the CINR field mean?

A: Carrier-to-Interference-and-Noise Ratio (CINR) represents the ratio between the power of the RF carrier (wireless signal) bearing the wanted signal and the total power of any interfering signals and noises. CINR is expressed in decibels (dB). Typically, the CINR level means the following:

- > 22 dB excellent signal quality
- 16 to 22 dB good signal quality
- 9 to 16 dB fair signal quality
- < 9 dB poor signal quality

Q: What is the EARFCN?

A: EARFCN stands for E-UTRA Absolute Radio Frequency Channel Number. A unique EARFCN number is assigned to each radio channel to calculate the exact frequency of the radio carriers. It represents the legal center channel on which a wireless service provider can operate its eNB equipment within a given spectrum band. For example, the correct EARFCN to use in Band 43 for 3660 MHz is 44190. Refer to the chart and other guidance in a BaiTip on this subject on our website: https://community.na.baicells.com/t/baitip-of-the-day-november-5th-2016-earfcn-frequencies/112

Q: How do I determine antenna down tilt?

A:

We recommend you use a down tilt calculator to aim your antenna accurately to get the maximum gain for your intended coverage area. There are many calculators available online; here is a link to one of them: http://www.commscope.com/calculators/qdowntilt.aspx

Refer to our BaiTip related to this topic: https://community.na.baicells.com/t/baitip-of-the-day-october-26th-2016-antenna-down-tilt-accuracy/114

Q: Besides down tilt, what other recommendations do you have for penetrating dense foliage?

A: In dense foliage areas, deploy narrow sector antennas (65 degrees or less) in order to concentrate the RF energy toward your clients. Also, use low PIM jumper cables to the sectors. Refer to our BaiTips on this topic: https://community.na.baicells.com/t/baitip-of-the-day-february-24th-2017-every-db-counts/243 and https://community.na.baicells.com/t/baitip-of-the-day-march-21st-2017-dont-use-legacy-lmr-cable-with-lte-go-low-pim/281

Q: What is the difference between Gen 1 and Gen 2 Nova-233 1W eNBs?

A: The Gen 2 eNB improvements include:

- 1/3 less weight (merged 3 boards into 1)
- ~ 50% less operating power
- Easier to handle, install, and weatherproof
- Addition of an SFP module, which ships with the unit
- Improved RF emissions

Q: Where can I find a list of the eNB alarms?

A: Please refer to the alarms list in the Baicells Operation, Maintenance, & Troubleshooting Guide: https://baicells.zendesk.com/hc/en-us/articles/360002892674-Operation-Maintenance-Troubleshooting-Guide

Q: Does rebooting an eNB affect service to users already connected?

A: Yes, a reboot will cause the eNB to stop serving users. In most cases, the users' connections will come back up, assuming they have made no changes during the reboot.

Q: If I change the frequency on an eNB, will users who are attached be automatically switched to the new frequency?

A: As of OMC v3.2.2., if you go to Strategy > Frequency&PCI, you can define a change task that will update the frequency of the selected eNB(s) automatically. You can also select up to 10 UEs to be changed to the new frequency automatically at the same time. Please refer to information on this feature in the Baicells Configuration & Network Configuration Guide: https://baicells.zendesk.com/hc/en-us/articles/115002163893-Configuration-Network-Administration-Guide

Sharon Redfoot - May 04, 2018 08:46

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